

Get a Taste of the Future!

by Catherine E. Borsché



Imagine being stuck in a house for months, not able to venture out to go to the grocery store whenever a particular food craving hits. All that you have to survive on is already stowed in the pantry. The items in this pantry have been predetermined long ahead of time, and if your taste buds happen to change, you are simply out of luck.

Astronauts flying aboard the International Space Station face that dilemma each time they leave Earth, although the Space Food Systems Laboratory at Johnson Space Center does all it can to ensure the astronauts are happy when it comes to their meals.

Menu planning for a Space Station crew begins when the crewmembers visit the Space Food Systems Laboratory. They essentially try every food item available and give each item a "score." The crew goes to Russia and repeats the process, this

time with the Russian food system. Once all the food samples are scored, sample menus are created by the United States and Russia. Those menus are then merged together, so the end result will usually have two meals per day coming from the Russian food system, and the two remaining meals from the United States food system. The astronauts will visit the Space Food Systems Laboratory again to try out these sample menus and make sure that they are completely satisfied with their choices.

However, in space, the menus are seldom used.

"We use the menu as a planning tool," said Vickie Kloeris, JSC Manager of Space Food Systems. "We do provide a copy of the menu to them. We put it in a container with the food, but they don't necessarily eat it in the order that we've planned it."

Food choice is extremely important to astronauts, and the longer the duration of the flight, the more significant those choices become. The meals are stowed pantry-style onboard Space Station, so crewmembers can eat food items in any order they wish. For instance, if crewmembers want to have chicken three nights in a row, they can do that.

"Being on Space Station, so much of what is going on is beyond their control," Kloeris said. "And so food is just a comfort thing that they would like to feel they have some input on or some control over. It's just a big psychological thing – I don't know if we've flown anyone to Station that has not been concerned about their food."

Emilce (Emmy) Vest, Food Services Director and Executive Chef for JSC, agrees that comfort food is of the utmost importance, especially when astronauts are in space.

"In situations where there is little outside stimulation, and we're somewhat lonely, food becomes more of a focus because it gives us sensual and chemical stimulation," Vest said. "We also crave the social payoff in 'breaking bread' with our companions."

The Space Food Systems Laboratory tries to vary the menus a bit by allowing the crew to take bonus containers into space, in which they can request special, off-the-menu food items. These items usually include commercially available candy bars, cookies or crackers – anything with a long shelf life. Yet even with the special goodies sent to the Space Station ahead of time, astronauts inevitably return to Earth wishing that they could have had more food variety in space.

More variety – especially fresh food items – often shows up when a Russian Progress vehicle docks to the Space Station. The Progress usually brings fresh items such as apples, oranges, grapefruits and other fruit items. The Russians will pack those types of fresh food items as well, but they also include interesting foods that Americans do not typically eat.

"The Russians will fly things like raw onion and raw garlic, because that's more a part of their culture than part of our culture," Kloeris said. "But it's interesting because some of our American crewmembers have said that even though it didn't sound all that great ahead of time, it actually was nice to have it because it was something totally different."

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Vickie Kloeris, JSC Manager of Space Food Systems, displays some space food items.

Choosing food items for Space Station crewmembers can also pose a challenge due to the fact that most crewmembers say that their tastes change while in orbit. While Kloeris notes that there is no real scientific data to support that theory, there is plenty of anecdotal data and personal accounts to support its likelihood. For instance, it is well known that astronauts seem to like spicier foods and tart beverages such as lemonade while in orbit, when on the ground those items are not as appreciated.

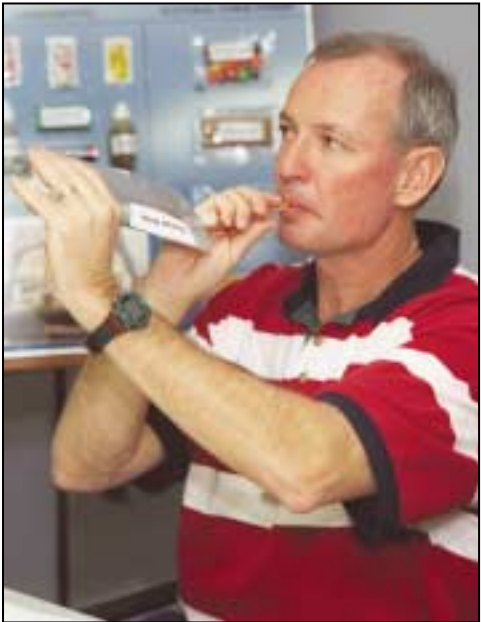
Astronaut Peggy Whitson's personal account of food while in space echoes that thought. "When STS-112 visited, I told the commander that I wasn't opening the hatch unless they had salsa," said Whitson, the Expedition 5 Space Station Science Officer. "My favorite space food was peanut butter. I'm not a big fan of it on the ground, but couldn't get enough of it in space."

Food becomes a priority when it is one of the few connections an astronaut has to home. Although the Space Food Systems Laboratory faces many challenges such as keeping the food varied, tasty and fresh for the astronauts, they are learning more and more after each Expedition crew about how to keep long-duration flight astronauts happy with their menus. And although food seems so basic to the ordinary person, it is much more important when you do not have ready access to a grocery store.

"Taste is one of the first senses with which we explore the world," Vest said. "There are a lot of chemical reasons for food to be a comfort mechanism. However, our primitive brain is hardwired to equate food with 'home' and safety. When we're hungry, we're all 2 years old."



Astronaut Jerry L. Ross, STS-110 Mission Specialist floats on the middeck of the Space Shuttle Atlantis along with a tray of food.

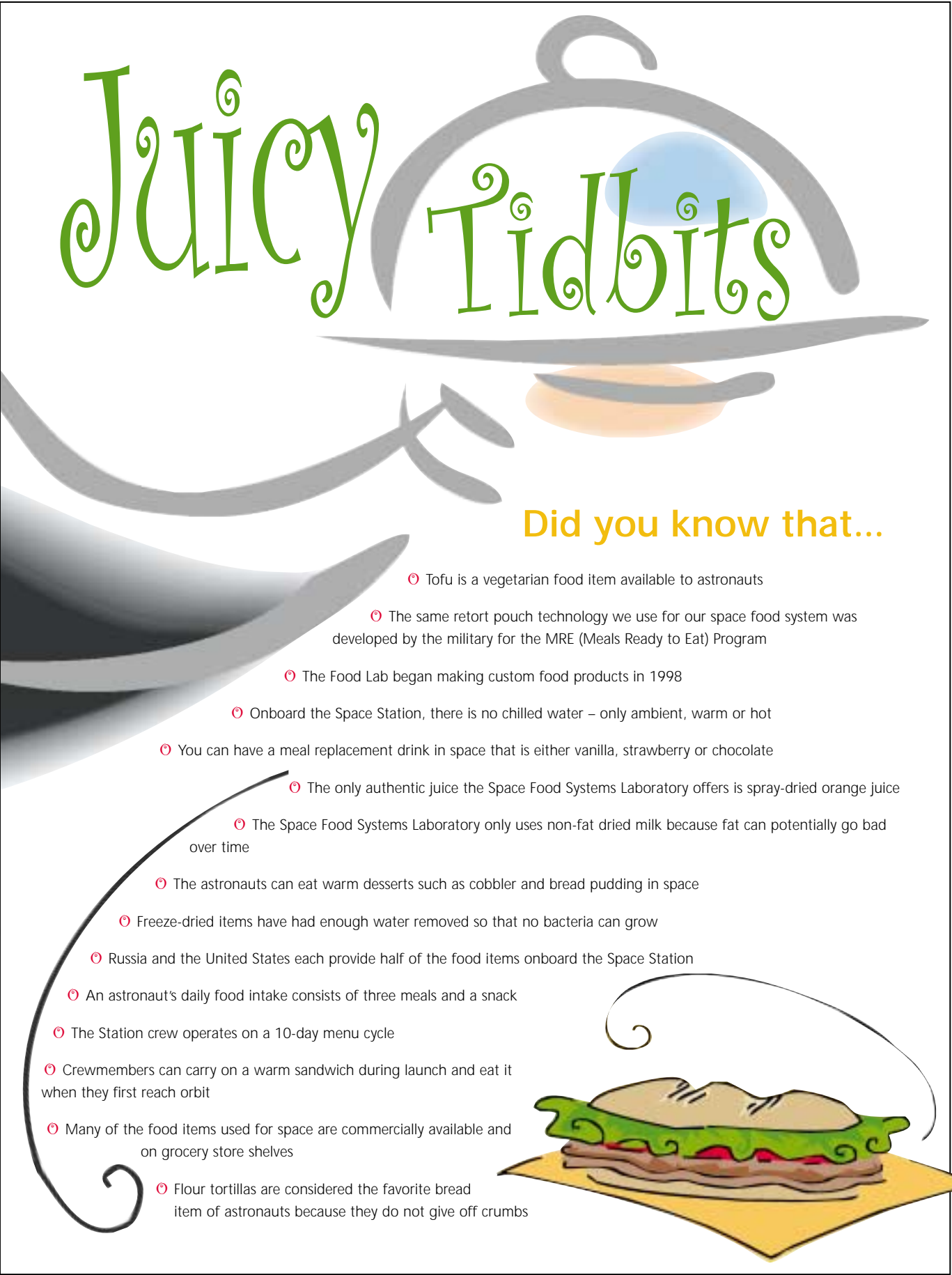


Astronaut Brian Duffy samples a beverage during a crew food evaluation session in the food laboratory at JSC.



Expedition 5 Space Station Science Officer Peggy Whitson and Flight Engineer Sergei Treschev share a meal in the Zvezda Service Module on the Space Station.

Juicy Tidbits



Did you know that...

- ❶ Tofu is a vegetarian food item available to astronauts
- ❷ The same retort pouch technology we use for our space food system was developed by the military for the MRE (Meals Ready to Eat) Program
- ❸ The Food Lab began making custom food products in 1998
- ❹ Onboard the Space Station, there is no chilled water – only ambient, warm or hot
- ❺ You can have a meal replacement drink in space that is either vanilla, strawberry or chocolate
- ❻ The only authentic juice the Space Food Systems Laboratory offers is spray-dried orange juice
- ❼ The Space Food Systems Laboratory only uses non-fat dried milk because fat can potentially go bad over time
- ❽ The astronauts can eat warm desserts such as cobbler and bread pudding in space
- ❾ Freeze-dried items have had enough water removed so that no bacteria can grow
- ❿ Russia and the United States each provide half of the food items onboard the Space Station
- ⓫ An astronaut's daily food intake consists of three meals and a snack
- ⓬ The Station crew operates on a 10-day menu cycle
- ⓭ Crewmembers can carry on a warm sandwich during launch and eat it when they first reach orbit
- ⓮ Many of the food items used for space are commercially available and on grocery store shelves
- ⓯ Flour tortillas are considered the favorite bread item of astronauts because they do not give off crumbs

